

WHAT IS CLAIMED IS:

1. A base station apparatus for performing wireless communication with one or more terminal apparatuses by using a contention-based communication system, comprising:

idle signal transmission means for transmitting an idle signal for notifying a terminal apparatus that a communication channel is available; and

system selection means for choosing between a first contention-based communication system in which each terminal apparatus transmits a data packet according to an idle signal without transmitting a control packet and a second contention-based communication system in which each terminal apparatus transmits a reservation packet according to an idle signal to ensure a communication channel and then transmits a data packet, wherein

said system selection means chooses between said first contention-based communication system and said second contention-based communication system according to a communication situation; and

said idle signal transmission means transmits to said terminal apparatus an idle signal including system specification information for specifying a communication system selected by said selection means.

2. The base station apparatus according to claim 1, wherein said system selection means chooses a communication system according to transmission line quality.

3. The base station apparatus according to claim 1, wherein said system selection means chooses a communication system according to a traffic situation on a transmission line.

4. The base station apparatus according to claim 1, wherein said system selection means chooses between said first contention-based communication system and said second contention-based communication system or leaves no communication system selected according to a communication situation; and said idle signal transmission means transmits to said terminal an idle signal including system specification information specifying a communication system selected by said selection means or specifying no communication system selected.

5. The base station apparatus according to claim 1, wherein when said reservation packet is received from one terminal apparatus, polling signal transmission means is provided for transmitting to each terminal apparatus a polling signal including terminal identification information for specifying that terminal apparatus.

6. A terminal apparatus for performing wireless communication with a base station apparatus by using a contention-based communication system, comprising:

idle signal reception means for receiving an idle signal notifying that a communication channel transmitted from said base station apparatus is available;

system determination means for determining whether a data packet communication system should be a first contention-based communication system for transmitting a data packet to a base station apparatus according to an idle signal

without transmitting a control packet or a second contention-based communication system for transmitting a reservation packet according to an idle signal to ensure a communication channel and then transmitting a data packet to a base station apparatus;

transmission means for transmitting a data packet to a base station apparatus according to reception of said idle signal when said system determination means determines a first contention-based communication system and transmitting to a base station apparatus a reservation packet including terminal identification information according to reception of said idle signal when said system determination means determines a second contention-based communication system, wherein said idle signal includes system selection information for choosing between said first contention-based communication system and said second contention-based communication system; and

said system determination means determines a communication system according to said system selection information and a communication situation.

7. The terminal apparatus according to claim 6, wherein said system determination means selects a communication system according to said system selection information and a length of a data packet to be transmitted.

8. The terminal apparatus according to claim 6, wherein said system determination means selects a communication system according to said system selection information and the number of retransmissions for a data packet to be transmitted.

9. The terminal apparatus according to claim 6, wherein said transmission means transmits a data packet according to reception of a polling signal when a polling signal received after reservation packet transmission contains its own terminal specification information.

10. A wireless communication system for performing wireless communication between one base station apparatus and one or more terminal apparatuses by using a contention-based communication system, wherein

a base station apparatus comprises:

idle signal transmission means for transmitting an idle signal for notifying a terminal apparatus of availability of a communication channel;

system selection means for choosing between a first contention-based communication system in which each terminal apparatus transmits a data packet according to an idle signal without transmitting a control packet and a second contention-based communication system in which each terminal apparatus transmits a reservation packet according to an idle signal to ensure a communication channel and then transmits a data packet; and

said system selection means chooses between said first contention-based communication system and said second contention-based communication system according to a communication situation; and

said idle signal transmission means transmits to each terminal apparatus an idle signal including system specification information for specifying a communication

system selected by said selection means;

each terminal apparatus comprises:

idle signal reception means for reception of said idle signal;

system determination means for determining a data packet communication system to be a first contention-based communication system or a second contention-based communication system;

transmission means for transmitting a data packet to a base station apparatus according to reception of said idle signal when said system determination means determines a first contention-based communication system and transmitting a reservation packet including terminal identification information to a base station apparatus according to reception of said idle signal when said system determination means determines a second contention-based communication system; and

said system determination means determines a communication system according to said system selection information and a communication situation.

11. The wireless communication system according to claim 10, wherein said system selection means of said base station apparatus selects a communication system according to transmission line quality.

12. The wireless communication system according to claim 10, wherein said system selection means of said base station apparatus selects a communication system according to a traffic situation on a transmission line.

13. The wireless communication system according to claim 10, wherein said

system determination means of a terminal apparatus selects a communication system according to said system selection information and a length of a data packet to be transmitted.

14. The wireless communication system according to claim 10, wherein said system determination means of a terminal apparatus selects a communication system according to said system selection information and the number of retransmissions for a data packet to be transmitted.

15. The wireless communication system according to claim 10, wherein said system selection means of said base station apparatus chooses between said first contention-based communication system and said second contention-based communication system or leaves no communication system selected according to a communication situation; and

    said idle signal transmission means of said base station apparatus transmits to said terminal apparatus an idle signal including system specification information specifying a communication system selected by said selection means or specifying no communication system selected.

16. The wireless communication system according to claim 10, wherein when said reservation packet is received from one terminal apparatus, said base station apparatus comprises polling signal transmission means for transmitting to each terminal apparatus a polling signal including terminal identification information for specifying that terminal apparatus.

17. The wireless communication system according to claim 16, wherein said transmission means of said terminal apparatus transmits a data packet according to reception of a polling signal when a polling signal received after reservation packet transmission contains its own terminal specification information.

18. A wireless communication method implemented between one base station apparatus and one or more terminal apparatus by using a contention-based communication system, comprising the steps of:

choosing, at a base station side, according to a communication situation between a first contention-based communication system in which each terminal apparatus transmits a data packet according to an idle signal without transmitting a control packet and a second contention-based communication system in which each terminal apparatus transmits a reservation packet according to an idle signal to ensure a communication channel and then transmits a data packet;

transmitting, at the base station side, an idle signal including system specification information specifying a selected communication system for notifying a terminal apparatus of availability of a communication channel;

determining, at a terminal apparatus side, a data packet communication system to be a first contention-based communication system or a second contention-based communication system according to terminal identification information included in said idle signal and a communication situation; and

at the terminal apparatus side, transmitting a data packet to a base station

apparatus according to reception of said idle signal when a first contention-based communication system is determined and transmitting a reservation packet including terminal identification information to a base station apparatus according to reception of said idle signal when a second contention-based communication system is determined.

19. The wireless communication method according to claim 18, wherein a base station apparatus side selects a communication system according to transmission line quality.

20. The wireless communication method according to claim 18, wherein a base station apparatus side selects a communication system according to a traffic situation on a transmission line.

21. The wireless communication method according to claim 18, wherein a terminal apparatus side selects a communication system according to said system selection information and a length of a data packet to be transmitted.

22. The wireless communication method according to claim 18, wherein a terminal apparatus side selects a communication system according to said system selection information and the number of retransmissions for a data packet to be transmitted.

23. The wireless communication method according to claim 18, wherein a base station apparatus side chooses between said first contention-based communication system and said second contention-based communication system or leaves no

communication system selected according to a communication situation; and

    said base station apparatus side transmits to said terminal apparatus an idle signal including system specification information specifying a selected communication system or specifying no communication system selected.

24. The wireless communication method according to claim 18, wherein when said reservation packet is received from one terminal apparatus, said base station apparatus side transmits to each terminal apparatus a polling signal including terminal identification information for specifying that terminal apparatus.

25. The wireless communication method according to claim 24, wherein said terminal apparatus side transmits a data packet according to reception of a polling signal when a polling signal received after reservation packet transmission contains its own terminal specification information.